

CLAIMS

1. A differential imaging method using a THz wave comprising: generating THz waves (4) on two different  
5 wavelengths within a frequency range of about 0.5 to 3 THz; irradiating a subject matter (10) with the THz waves on two wavelengths to measure their transmittances; and detecting the presence of a target having wavelength dependence on the absorption of the THz wave from a difference of their  
10 transmittances.

2. The differential imaging method according to claim 1, comprising: scanning two-dimensionally a surface of the subject matter with each of the THz waves (4) on two  
15 different wavelengths; and displaying two-dimensionally an image of a position where the transmittances of the two wavelengths differ.

3. A differential imaging apparatus using a THz  
20 wave comprising: a THz wave generation device (12) which generates THz waves (4) on two different wavelengths within a frequency range of about 0.5 to 3 THz; a transmission intensity measurement device (14) which irradiates a subject matter (10) with the THz waves (4) on two wavelengths to  
25 measure their transmittances; and a target detection device (16) which calculates transmittances from measured transmission intensity and detects the presence of a target

having wavelength dependence on the absorption of the THz wave from a difference of their transmittances.

4. The differential imaging apparatus according to  
5 claim 3, comprising: a two-dimensional scanning device (18)  
which scans two-dimensionally a surface of the subject matter  
with each of the THz waves (4) on two different wavelengths;  
and an image display device (20) which displays two-  
dimensionally an image of a position where the transmittances  
10 of the two wavelengths differ.

5. The differential imaging apparatus according to  
claim 3, wherein the THz wave generation device (12) has a  
nonlinear optical crystal (1) which can generate a THz wave  
15 by a parametric effect; a pump light incidence apparatus (11)  
which allows a pump light (2) to be incident upon the  
nonlinear optical crystal to generate an idler light (3) and  
the THz wave (4); and a switching device (13) which switches  
the generated THz wave (4) to two different wavelengths.

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6. The differential imaging apparatus according to  
claim 3, wherein the transmission intensity measurement  
device (14) comprises a splitter (14a) which splits the THz  
wave (4) into a measurement light (4a) and a reference light  
25 (4b) in a fixed ratio; a condensing lens (14b) which focuses  
the measurement light onto the subject matter (10) to apply  
the measurement light thereto; and an intensity measurement

device (15) which measures intensity of the measurement light and reference light that have passed through the subject matter.